PLANT PROTECTION BULLETIN

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WORLD REPORTING SERVICE ON PLANT DISEASES AND PESTS

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FAO PLANT PROTECTION BULLETIN

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FAO Plant Protection Bulletin

VOL. VI, No. 2 A Publication of the NOVEMBER 1957

World Reporting Service on Plant Diseases and Pests

Rice Dwarf Disease in the Philippines

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THE earliest occurrence in the Philippines of the virus disease known as rice dwarf or rice stunt, to the writer's knowledge, was encountered on a number of upland rice varieties in the Central Experiment Station of the Bureau of Plant Industry in Manila during the Japanese occupation in 1943 and 1944. In addition to other typical symptoms, some plants of the affected varieties were considerably stunted. The occurrence of the disease was of short duration, because, with the return of the liberation forces in 1945, the Bureau of Plant Industry compound as well as other parts of Manila were burnt, leaving only an insignificant area in Manila undestroyed. All the records pertinent to the disease, including data on the reaction of rice varieties, specimens and drawings, were lost. It was the consensus of opinion that the disease was introduced by the Japanese.

Before the last war, there was an unconfirmed report of the existence of rice stunt, referred to then as "accep (accip) na pula" disease. In 1941, Agati *et al*[1] reported an outbreak of this rice disease and attributed its cause to rice dwarf virus described from Japan by Fukushi.[2] However, Padwick[3] doubted whether the disease reported by them from the Philippines was the same as the rice

[1] AGATI, J. A., P. L. SISON and R. ABALOS. 1941. A progress report on the rice maladies recently observed in central Luzon with special reference to the "stunt or dwarf" disease. *Philippine Jour. Agr.* *12*: 197-210.

[2] FUKUSHI, T. 1934. Studies on the dwarf disease of rice plant. *Jour. Fac. Agr. Hokkaido Imp. Univ.* *37*: 41-164.

[3] PADWICK, G. W. 1950. *Manual of rice diseases.* Commonwealth Mycological Institute, Kew, Surrey. 198 pp.

TABLE 1. *Reaction of Philippine rice varieties to rice dwarf virus, as indicated by results of inoculating 102 plants of each variety with green rice leafhopper.*

Variety	Number plants infected	Number plants succumbed	Percent infected plants succumbed
Milketan 21	37	8	21.6
Buenketan 99	35	2	5.7
Buenketan 101	25	1	4.0
Milfor 39	22	0	0
Milbuen 5	19	5	26.3
Milfor 6	15	5	33.3
Milbuen 3	12	1	8.3
Milbuen 6	5	2	40.0
Milketan 20	4	0	0

dwarf known to be widespread in Japan. The writer shares Padwick's view on account of the great dissimilarity of "accep na pula" to the rice dwarf. The symptoms of rice dwarf as described in literature have no semblance to those produced by "accep na pula."

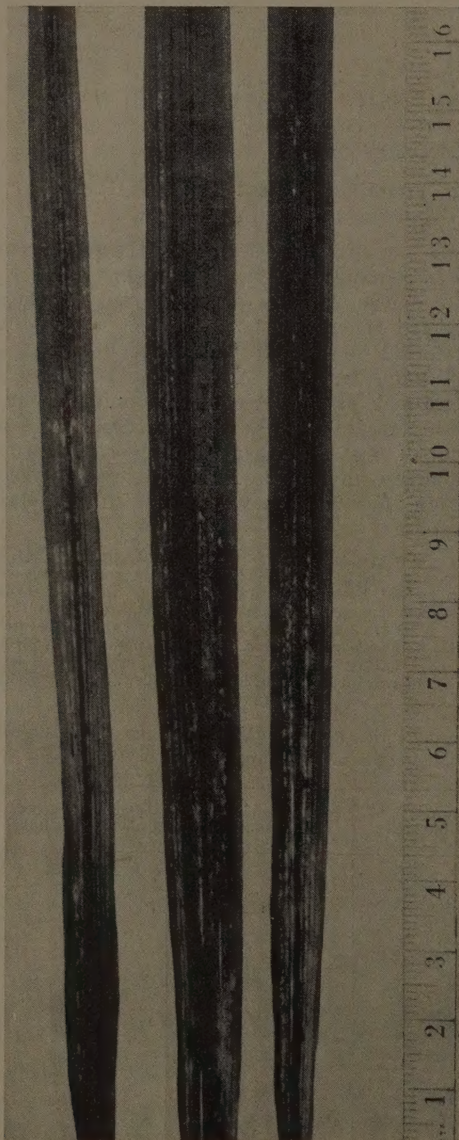

Figure 1. Leaves of rice variety Buenketan 99 infected with rice dwarf virus, showing interrupted yellowish white streaks parallel to veins and chlorotic spots or partial chlorosis on the lower parts.

The rice dwarf disease reoccurred in the Philippines in 1956 on seedlings of rice varieties introduced from the United States. The sudden appearance of the disease aroused much interest, because previous work indicates that this virus is not carried by seed. So far the exact source of infection has not been determined, although the presence of the vector, green rice leafhopper (*Nephotettix apicalis* var. *cincticeps* Uhl.), has been verified.

The rice dwarf disease as it occurs in the Philippines is characterized by the presence on leaves of interrupted yellowish white streaks parallel to leaf veins which sometimes coalesce to produce chlorotic spots or partial chlorosis of the leaf, especially near the base (Figure 1). Invariably, the same pattern is produced on both sides of the leaf. Whenever early infection takes place, stunting of the plant follows (Figure 2), resulting at times in slow death. The virus principle, referred to as *Fractilinea oryzae* Holmes, was found to be easily transmissible by the leafhopper *Nephotettix apicalis* var. *cincticeps*.

Of the five American varieties found infected, Fortuna had the greatest number of diseased plants, followed by varieties numbered 9045, 9075, 9249, and 9155 in descending order. Using these plants as sources of infection and the green rice leafhopper as the transmitting agent, an experiment was carried out to test the reaction of local varieties to the dwarf disease. Nine Philippine varieties of 102 plants each were inoculated under controlled conditions on 15 January 1957, when the seedlings were 45 days old. Counts of plants showing conspicuous symptoms of the disease were periodically made and the results obtained in the final counts on 17 April are summarized in Table 1. The control plants, on which no leafhoppers were released, remained healthy.

If the number of infected plants can be regarded as a criterion, it appears that the varieties show susceptibility in the order as they are listed in Table 1, Milketan 21 being the most susceptible and Milketan 20 the least. However, in the test the plants were infected *en masse* by placing 102 plants together with vectors in each insect-proof cage. Therefore,

Figure 2. A plant of rice variety Fortuna infected with rice dwarf virus, showing stunted growth.

the percentage of infection does not necessarily represent the degree of susceptibility of the varieties as the number of insects that fed on each plant would not be the same. In that case, the rate of mortality might be considered as a supplementary index to varietal susceptibility, rating Milketan 21, Milbuen 5 and 6, and Milfor 6 as the most sensitive varieties.

All the nine Philippine rice varieties included in the present test were claimed to possess high degree of resistance to major diseases, particularly to stunt or "accep na pula" disease of rice.[4] The present results prove that these varieties are not highly resistant to rice dwarf or rice stunt. Further experiments will be carried out to test other rice varieties and hybrids for their resistance to the dwarf disease.

[4] SERRANO, F. B. 1956. New rice hybrids and their commercial possibilities. *Philippine Jour. Sci.* *85*: 263-281.

Take-all of Wheat in Chile

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TAKE-ALL of wheat was found fairly late in Chile, long after many other countries had reported extensive damage from this disease. The first record of its existence in Chile was made in 1940 and was followed by a severe epidemic in 1941, with other outbreaks in 1947, 1952 and 1953. In Cautín, the most important wheat-growing province of the country, a loss of 20 percent of the crop was recorded in the epiphytotic of 1952. In the intervening years only slight damage was reported in the country as a whole. In some areas, however, the disease appears fairly regularly. Thus, near Rancagua, in an area underlaid by a hard pan, losses around 30 percent have been reported and a 10 percent decrease in yield is not uncommon. Studies on this disease have been handicapped by the variation in its occurrence; fields that have a severe attack one year are sometimes entirely free the next, while neighboring areas that were formerly free of the disease may become affected. During the past few years intensive studies have been started in the hope of eventually controlling this disease.

Identification of the Cause

That the disease is caused by the fungus *Ophiobolus graminis* has now been definitively established. The disease has a typical syndrome consisting of necrotic roots, stunted and weak plants with little or no seed; sometimes well-developed plants may produce white heads containing shriveled kernels. Felt pads of mycelium are found between the sheaths in the necrotic areas at the base of the stem. Perithecia and ascospores of the fungus conform to the descriptions given in literature. Isolations from diseased stems resulted in a number of different fungi, but only two of these were pathogenic to wheat, *Ophiobolus graminis* and a *Fusarium* species. When soil was infested with different isolates, *O. graminis* was found to be very pathogenic, while the *Fusarium* only caused a mild necrosis of the roots. The cultural characteristics of the Chilean strain of *O. graminis* is similar to those of strains obtained from England and the United States. Although the Chilean strain seemed to be more pathogenic than the others, this difference could be ascribed to the loss of virulence of strains from other countries through constant cultivation on laboratory media. A similar decrease in virulence takes place with the Chilean strains, but it can be prevented by passing the fungus through the host plant. For ease of re-isolation, this has been done on wheat seedlings growing in sterile culture.

Distribution

Isolations from diseased wheat plants in various parts of the country indicated that *Ophiobolus graminis* is widely distributed in the rich Central Valley of the country. The fungus has been found in areas stretching from Quinta Tilcoco, near the northern extremity of the Valley to Temuco, through the central part somewhat sporadically, and then on to the far south of the agricultural region at Centinela. Thus the range of the disease along the same longitude is almost 1,000 kilometers. It includes areas of sparse rainfall in the north (44.9 cm. per year), in which the wheat is entirely under irrigation during the growing season, and areas with a plentiful supply of rain (160 cm. per year) in the south. The disease occurs where the soil is slightly alkaline, as well as in areas that are slightly acid. No accurate figures are yet available on the total loss caused by this disease. The general impression of the agronomists in the country is that no correlation exists between the application of ordinary fertilizers and the amount of take-all.

Studies in Control Measures

One of the widely advocated agricultural practices for the control of take-all is crop

rotation. Yet the disease occurs in areas where rotation is practiced. One of the common components of the rotation system is the seeding of a field to pasture for a number of years before returning to wheat. Sometimes the pasture crop is red clover and at other times grasses. A possible weak point lies in the type of pastures and their management; clover fields are often heavily infested by wild grasses and in other cases the pastures are planted directly with such grasses. One of the commonest grasses is *Holcus lanatus*, a grass that has been reported as susceptible to *Ophiobolus graminis*. Obviously such a grass could harbor, if not increase, the pathogen in the soil until the next wheat crop. Any beneficial effects of rotation on disease would be then nullified. Fallow that might tend to diminish the population of the pathogen in soil is not commonly practiced by the farmers.

Current studies on the control of take-all in Chile are proceeding along a number of lines. Fertilization and rotation, the two practices that have been successful elsewhere, are being tried. Furthermore, a search is being conducted for a resistant variety of wheat which may serve as breeding material for the development of commercial stocks. Finally, investigations are being carried on to determine which grasses are resistant to the disease for possible inclusion in future rotation systems. This type of study is of special importance because of a marked movement in Chilean agriculture to increase the pasture acreage.

Resistance of Wheat Varieties

Experimental results reported from various countries indicate that wheat varieties vary in susceptibility to take-all only to a small extent and that the variation is in association generally with varietal adaptability. In Chile, an intensive wheat breeding program is in progress and the world wheat collection is being tested for rust resistance. This offers an opportunity to test in an extensive scale the varietal reactions to take-all. It has been planned to include approximately 4,000 varieties in the trials and two separate greenhouse tests have been initiated, one in sterilized soil using high concentrations of inoculum and the other in naturally infested soil.

In the preliminary trial, 358 wheat varieties, including 18 wheat and *Agropyron* hybrids, were tested and the following were found to be highly resistant, with vigorous growth and without lesions on roots.

Wheat Varieties
(world collection entry number)

No. 30 (Marshall No. 7, Australia)
No. 181 (Rural New Yorker No. 6, New York)
No. 188 (Sol from Washington, of Swedish origin)
No. 198 (Early Beard)
No. 554 (B156, China)
No. 582 (C56, China)

Wheat × *Agropyron*
(Sando stock number)

5	36
7	82 *a*

Resistance of Grasses

Recently efforts have been made in Chile to expand the pasture acreage in order to support the increase of cattle and milk production, and for this purpose new pasture grasses have been introduced and tested for their adaptability. Grasses are often planted together with wheat or at other times after wheat in rotations. In the southern part of Central Valley rotation including wheat and grasses in succession is commonly practiced. Some of these grasses are known to be susceptible to *Ophiobolus graminis* and may play an important role in the perpetuation of the pathogen.

Fifty grasses, including both indigenous and introduced species, were tested in the greenhouse for susceptibility to take-all. The grasses found to be highly resistant are as follows:

Agrostis alba	*F. tualatin*
A. tennis	*Oryzopsis hymenoides*
Cynosurus echinatus	*O. miliacea*
Dactylis glomerata	*Paspalum dilatatum*
Festuca K31	*Phalaris arundinacea*
Fromenthal P. I. 1523	*Poa pratensis*
F. schroeder	*Phleum pratense*

Some grasses such as *Agropyron* and *Bromus* species are found to be uniformly susceptible. In wheat-growing areas where take-all occurs, those grasses should not be planted and only the resistant species should be considered in rotation with wheat.

Occurrence of *Phacidium pini-cembrae* on Swiss Stone Pine in Italy

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During the past few years attention has been drawn by the forestry authorities of the province of Bolzano to a serious blight of young trees of Swiss stone pine (*Pinus cembra*). From facts ascertained thus far, the disease is particularly severe on mountain slopes having a northern or northeastern exposure over the highest area of the Isarco valley, where it is reported to be widespread. Swiss stone pine is found from an elevation of 1,500 meters to the vegetation limit.

The disease kills the lower portions of young trees (Figure 1) and sometimes causes the death of branches of older trees which are near to the ground. In many places, particularly in the small valleys and the glacial depressions in the affected area, all the young trees are considered lost. The disease is easily detected, as the affected needles become characteristically whitish and very brittle.

On the dead needles of affected trees, hysterothecia of a species of *Phacidium*

Figure 1. Branches of a young Swiss stone pine killed by *Phacidium pini-cembrae.*

Figure 2. Hysterothecia of *Phacidium pini-cembrae* on needles of Swiss stone pine (enlarged).

(Figure 2), which was identified as *P. pini-cembrae* (Rehm.) Terr., has always been found. The hysterothecia appear in the spring when the snow melts. They mature at the end of summer, and spores are liberated in the autumn, causing new infections.

According to Terrier[1] who studied this fungus in Switzerland, *Phacidium pini-cembrae* is generally found on the northern side of the Alps. Discovery of this species in the province of Bolzano is therefore the first record of its occurrence on the southern side of the Alps as well as in Italy.

[1] TERRIER, C. A. 1942. Essai sur la systématique des Phacidiaceae (Fr.) sensu Mannfeldt (1932). *Beitr. zur Kryptogamenflora der Schweiz* 9 (2): 1-99.

Phacidium pini-cembrae has many morphological and physiological characteristics similar to *P. infestans* Kar., which is widespread in Scandinavia and North America, causing a disease known as snow blight in many species of conifers. Like *P. infestans*, *P. pini-cembrae* is also a pathogen which becomes active only when heavy snow has accumulated on the ground. This accounts for the mortality of young trees and lower branches of adult trees. In the province of Bolzano the disease had never been observed before 1950 and its first appearance was noticed after the exceptionally heavy snowfall in 1951.

Record of *Colletotrichum capsici* on *Malpighia* in Pakistan [1]

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THE occurrence of *Colletotrichum capsici* (Syd.) Butler & Bisby (syn. *Vermicularia capsici* Syd.) on betel pepper (*Piper betle*) was previously recorded by Hafiz *et al* [2] in Pakistan. Later the same fungus was collected at Dacca, East Pakistan, on Barbados cherry (*Malpighia punicifolia*), the leaves and petioles of which were found to be studded with black spots bearing acervuli of *Colletotrichum* and also acervuli of a species of *Gloeosporium* of the *Glomerella cingulata* type in considerable number.

The spores of this species of *Colletotrichum* from infected Barbados cherry measure 20 × 3.8 μ in average and those from 70-day-old culture of potato dextrose agar maintained at room temperature (60-90° F.) average 22.3 × 3.8 μ, which fall well within the range

[1] Acknowledgement is made by the authors to Dr. J. C. F. HOPKINS of the Commonwealth Mycological Institute, and Mr. AZMATULLAH KHAN of the University of Karachi, for their assistance in the course of this work.

[2] HAFIZ, A., AKBAR, K. and M. SHARIFF. 1956. *Colletotrichum capsici* (Sydow) Butler & Bisby on *Piper betle* L. *Biologia:* 2 : 216.

Figure 1. Colletotrichum capsici on Malpighia punicifolia.

of 17-28 × 3-4 μ given in the original description of *C. capsici*. Setae of this fungus measure 124 μ long in average, which is also within the range of 70-145 μ for *C. capsici*.

Available literature shows no record of *Colletotrichum* species on Malpighiaceae. Butler and Bisby[3] reported *C. capsici* as occurring on 11 hosts in 9 genera from the Indo-Pakistan subcontinent. Later reports of this fungus did not extend its host range. According to J. C. F. Hopkins of the Commonwealth Mycological Institute, Kew Herbarium has specimens of *C. capsici* on more than 30 host genera but not on any species of Malpighiaceae. He also suggested that the fungus under reference be named *C. capsici*.

[3] BUTLER, E. J. and G. R. BISBY. 1931. Fungi of India. *Imp. Coun. Agr. Res. Sci. Monogr. 12.*

Since *Malpighia punicifolia* is a new host, a description of the fungus on this host is given as follows:

Lesions minute, black, foliicolous, amphigenous but mostly hypophyllous, mainly along the midrib and veins, also petiolicolous. Acervuli raised, discoid, black, with many setae. Setae straight or curved, deep brown, but light brown or even hyaline when young, 7.6 μ thick at base, 64.6-209 μ long averaging 124 μ. Spores falcate, also terete with acute ends or fusoid, hyaline, (15.2)-19-22.8-(26.6) × 3.8 μ on host with an average of 20.0 × 3.8 μ, (17.1)-19.0-22.8-(24.7) × 3.8 μ with an average of 22.3 × 3.8 μ (Figure 1). Specimens collected on 27 November 1956 at Balda Gardens, Dacca, East Pakistan, by Saeed-Ul-Huq and Abdul Ghafoor (Accession No. 3783).

Outbreaks and New Records

Peru

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New Hosts of Parasitic Fungi

SEVERAL pathogenic fungi have been recently identified on new host plants which had not been reported previously in Peru. All the identifications were confirmed by P. L. Lentz, National Fungus Collection, Agricultural Research Service, U. S. Department of Agriculture.

Colletotrichum graminicolum (Ces.) Wils. was isolated from leaf spots on alfalfa plants grown at La Molina. This finding is important because in the humid temperate and hot zones of Peru, *C. graminicola* is widespread on grasses and cereals, specially on oats, rye and sorghums, varieties of broomcorn being particularly susceptible. The fungus attacks mainly roots, crowns and stems of cereals and causes zonated leaf spots on sorghums. Susceptible sorghum varieties are defoliated.

Helminthosporium sativum Pam., King & Bakke, the cause of foot rot of barley and wheat, and *Curvularia lunata* (Wakk.) Boed. were found on Bermunda grass (*Cynodon dactylon*), causing brown spots on leaves and the base of young stems. This is the first record of *C. lunata* in Peru, although the fungus is known to have a world-wide distribution in warm temperate and tropical regions on many hosts.

A fungus belonging to the genus *Curvularia*, probably also *C. lunata*, was isolated from potato leaves, which showed small circular brown spots similar to those caused by early blight (*Alternaria solani*), at Huancayo in central Peru.

A species of *Phoma* was isolated from potato stems on which it produced a great number of pycnidia on brown lesions which later turned to white. Among the many species of *Phoma* known to attack potatoes, the fungus seems to be *Phoma solanicola* Prill. & Del. The symptoms observed on potato stems in Peru are similar to those described by Köhler[1] in Germany.

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[1] KÖHLER, E. 1928. Zur Kenntnis von *Phoma solanicola* Prill & Del. *Angew. Bot. 10* : 113-139.

Saint Lucia (British West Indies)

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Occurrence of Leaf Scald of Sugar Cane

During a visit to Saint Lucia in June 1957, leaf scald disease caused by *Xanthomonas albilineans* was recorded on sugar cane. As in Martinique, the sugar cane variety B34104 was found severely affected. Cultures of the pathogene were sent to Dr. W. J. Dowson, Botany School, Cambridge, for examination and were found to be identical with isolates of *X. albilineans* from other countries. Symptoms characteristic of the disease have been reproduced on variety B34104 by artificial inoculation with the local isolate of the pathogene.

In the American tropics, the leaf scald disease of sugar cane is now known to occur in Brazil, British Guiana, Surinam, Martinique and Saint Lucia. The world distribution of the disease is given in the *Distribution Maps of Plant Diseases*, No. 33 (Edition 3) issued by the Commonwealth Mycological Institute. (The information was received through the Caribbean Commission, Port of Spain, Trinidad.)

Plant Quarantine Announcements

Federal Republic of Germany

Plant Inspection Ordinance of 23 August 1957, published in the *Bundesgesetzblatt* I, No. 49, 28 August 1957, consolidates and replaces 35 ordinances, notifications and orders issued before 31 July 1956 concerning the importation and exportation of plants and products. The new Ordinance came into force on 1 October 1957 unless otherwise specified.

The new Ordinance is also applicable to Berlin but not to Saar.

Diseases and Pests Prohibited

I. Importation of any plants infested or infected with any of the following plant pests or pathogenes is prohibited, even if only part of the consignment is found infested.

1. Virus diseases of strawberry
2. Virus diseases of fruit trees of the genera *Cydonia, Malus, Prunus, Pyrus, Ribes* and *Rubus*
3. Virus diseases of roses
4. *Endoconidiophora fagacearum*
5. *Endothia parasitica*
6. *Synchytrium endobioticum*
7. *Ceratitis capitata* (living stages)
8. *Hyphantria cunea* (living stages)
9. *Laspeyresia molesta* (living stages)
10. *Phthorimaea operculella* (living stages)
11. *Popillia japonica* (living stages)
12. *Rhagoletis pomonella* (living stages)
13. *Tortrix pronubana* (living stages)
14. *Viteus vitifolii* (living stages)
15. *Heterodera rostochiensis* (living or dead)
16. *Quadraspidiotus perniciosus* (living or dead; slight infestation of fruit may be permitted from 1 December to 31 March if the fruit is to be immediately processed)

II. Importation of the following plants is prohibited if found infected or infested with the specific pests or diseases indicated (the nematode and insects refer to living stages). In case of slight infestation, the entry of consignments may be permitted.

1. Vines – virus diseases of *Vitis*
2. Rooted cotoneaster, roses and fruit trees (*Cydonia, Malus, Prunus, Pyrus, Ribes, Rubus*) – *Agrobacterium tumefaciens*
3. Potato tubers – *Corynebacterium sepedonicum*
4. Gladiolus and freesia corms – *Pseudomonas marginata; Fusarium oxysporum* f. *gladioli; Sclerotinia gladioli*
5. Gladiolus corms – *Septoria gladioli; Taeniothrips simplex*
6. Begonias (excluding fruit and seed) – *Xanthomonas begoniae*
7. Hyacinth bulbs – *Xanthomonas hyacinthi; Sclerotinia bulborum*
8. Flower bulbs and tubers – *Botrytis* spp.; *Sclerotium tuliparum; Ditylenchus dipsaci; Eumerus strigatus; E. tuberculatus; E. narcissi; Lampetia equestris*
9. Iris rhizomes – *Botrytis* spp.
10. Rooted azalea – *Exobasidium japonicum; Ovulinia azaleae; Septoria azaleae; Acalla schalleriana; Gracilaria azaleella*
11. Narcissus bulbs – *Fusarium bulbigenum*
12. Chrysanthemum – *Diarthronomyia chrysanthemi*
13. Cherries – *Rhagoletis cerasi*

Plants Prohibited

Importation of following plants and parts of plants is prohibited.

1. Living red oaks (*Quercus borealis maxima; Q. coccinea; Q. falcata; Q. ilicifolia; Q. palustris; Q. velutina*) grown outside Europe (except fruit and seed).

2. Rooted vines (*Vitis*), their living perennial aerial parts, leaves, and dry wood.

3. Living chestnut trees (*Castanea*) (except fruit and seed).

4. Living woody dicotyledonous plants and chrysanthemums prohibited from 16 April to 30 September, except fruit and seed, cut flowers and binding material, cactus and plants grown in and imported from Belgium, Denmark, Finland, Great Britain and North Ireland, Ireland, Iceland, Luxembourg, the Netherlands, Norway, Poland and Sweden.

5. Living plants with soil from Japan, Canada, and U. S. A.

6. Used vine poles.

7. Soil containing plant material or humus, except peat.

Imports Requiring Disinfection

1. Living rooted woody dicotyledonous plants (except cactus and plants grown in and imported from the European countries mentioned

above) imported between 1 October to 15 April must be disinfected at the place of entry under supervision of the Plant Protection Service.

2. Living woody dicotyledonous plants without roots (except fruit and seed, cut flowers and binding plants imported from 1 October to 15 April, cactus, and plants from the European countries mentioned above) must be disinfected at the place of entry during the period when importation is permitted.

Imports Subject to Special Requirements

1. Rooted plants except vegetables and medicinal plants may be imported only if originated in an area where vines were not grown during the preceeding five years and where freedom from potato root eelworm (*Heterodera rostochiensis*) was ascertained by official soil tests. They must also originate in a field where potato wart (*Synchytrium endobioticum*) does not occur.

2. Fresh potato tubers are subject to the same requirements as rooted plants. In addition, they must not contain soil in excess of 2 percent of the net weight, and they must be packed in new containers whenever containers are used.

3. Fruit trees (*Cydonia, Malus, Prunus, Pyrus, Ribes, Rubus*), strawberry plants and roses (except cut flowers and fruit and seed) may be imported only if grown under official supervision during the growing season and found free from virus diseases.

4. Fresh grapes must be free from other parts of vine.

5. Living vine plants must be air dry and free from soil.

Requirements for Cereals and Dry Pulses

1. Cereals (*Avena, Hordeum, Panicum, Secale, Setaria, Sorghum, Triticum, Zea*) for milling or processing for human consumption shall be disinfested, processed or re-exported within a time limit under the supervision of the Plant Protection Service, if found infested with: *Calandra granaria, C. oryzae, C. zea-mais, Laemophloeus* spp., *Oryzaephilus surinamensis, Rhizopertha dominica, Sitotroga cerealella, Tenebroides mauritanicus, Trogoderma granarium.*

Cereals not mentioned above and oil cakes if infested with the pests enumerated, will be disinfested before storing, or re-exported or processed immediately after leaving the first granary or storage (see also requirement under *Certification*).

2. Dry pulses (*Cicer, Lathyrus, Lens, Lupinus, Phaseolus, Pisum, Soja, Vicia*), except seed for sowing, if infested by any species of Bruchidae, will be disinfested before storing, or re-exported or processed after leaving the first granary or storage (see also requirement under *Certification*).

The above provisions with regard to cereals and dry pulses will come into effect on 1 July 1958.

Certification and Inspection

The following plant materials may be imported from the countries indicated only if accompanied by a phytosanitary certificate issued by the country of origin within 20 days before shipment in the form annexed to the International Plant Protection Convention, in German, or with a certified German translation and in the language of the country of origin. Whenever disinfection or disinfestation has been carried out, particulars of the treatment should be indicated.

In case of cereals, dry pulses and oil cakes, the certificate should be issued by the country from which the materials are directly imported, instead of the country of origin. This provision will come into force on 1 July 1958.

Where a consignment has been split up outside the country of origin, each splitted consignment should be accompanied by a certified certificate and also a certificate in the prescribed form issued by the country in which the splitting took place.

All the following plant materials, including packings and conveyance, will be inspected upon arrival.

1. Timber and saw wood of oaks from Canada and U.S.A.
2. Living angiospermous plants from Japan, Canada and U.S.A.
3. Living angiospermous plants imported between 1 November and 15 April (except subterranean parts, seed, monocotyledonous plants and tomato fruit), potato tubers, flower bulbs and tubers, and iris rhizomes from Greece, Yugoslavia, Austria, Romania, Czechoslovakia, Hungary and U.S.S.R.
4. Living plants (except fruit and seed) enumerated below from countries not mentioned under 2 and 3:
   a) living woody dicotyledonous plants
   b) chrysanthemums
   c) strawberries
   d) carnations
   e) begonias
   f) potato tubers
   g) flower bulbs and tubers in dormant stage
   h) iris rhizomes
5. Fresh fruits enumerated below from countries not mentioned under 2 and 3:

a) deciduous fruits and berries (*Cydonia, Malus, Prunus, Pyrus, Ribes, Rubus*)
b) citrus fruit
c) hard-shelled fruit with green skin or green cupule (particularly almonds, hazelnuts, walnuts, chestnuts, pistachio nuts)
d) ripened fruit of rose
e) grapes

6. Cereals and dry pulses (referring to the genera specified under Requirements for cereals and dry pulses)
7. Oil cakes of plant origin

Personal properties removing from certain European countries, individual plants and parts of plants in bouquets and wreaths not for commercial use, food provisions, and consignments less than 5 kilograms for consumption are exempt from certification requirement.

Points of Entry

Plants and plant products which require to be accompanied by phytosanitary certificates may be imported only through the customhouses listed in the Ordinance; some of the customhouses are reserved for mail, air consignments, or for specific commodities.

Consignments in Transit

Transit shipments via free ports or via mail are not subject to restrictions, certification and inspection.

Exemptions

Exemptions from prohibition or restrictions may be granted if imports are for scientific purposes, and in some others cases.

Mexico

Foreign Plant Quarantine No. 15 of 4 June 1957, published in the *Diario Oficial* Vol. 222, No. 37, 13 June 1957, when it came into effect, prohibits unconditionally the importation of cacao plants, parts and organs thereof and unprocessed cacao products. For scientific purposes, these materials may be imported only if a special permit has been obtained through the Directorate-General of Agricultural Defense. The purpose of this quarantine is to prevent the introduction of the swollen shoot virus disease, witches broom (*Maramius perniciosus*) and other cacao diseases which do not occur in Mexico.

News and Notes

International Botanical Congress

The Ninth International Botanical Congress will be held in Montreal, Canada, from 19 to 29 August 1959, at McGill University and the University of Montreal. The program will include papers and symposia related to all branches of pure and applied botany, including plant pathology and weed control. An initial circular, giving information on the program, accommodations, excursions and other details, will be available early in 1958. This information and subsequent circulars, including application forms, will be sent on request. Those interested should write to the Secretary-General, asking to be placed on the Congress mailing list. All requests should be addressed to: Dr. C. Frankton, Secretary-General, IX International Botanical Congress, Science Service Building, Ottawa, Ontario, Canada.

Inter-African Phytosanitary Commission

The second meeting of the Inter-African Phytosanitary Commission was held in London, 18-19 September 1957, and was attended by the representatives of Belgium, Federation of Rhodesia and Nyasaland, France, Portugal, United Kingdom, and Union of South Africa. The Commonwealth Institute of Entomology and Commonwealth Mycological Institute were also represented.

A draft of co-ordinated legislation for the protection of Africa South of the Sahara against the introduction of insects and diseases, which proposes, in addition to general quarantine procedures, minimum requirements and specific measures for regulating the importation of plant materials of economic importance to the region, was presented at the meeting. The Commission requested participating governments to submit their comments on the measures proposed and requested the Scientific Secretary of the Commission to prepare, in the light of these comments, a revised draft list of minimum requirements, which is to be presented for discussion at a technical meeting to be held in Pretoria in April 1958. The Commission recommends that the technical meeting should also examine the standards of quarantine stations, with special reference to equipment and operation.

In view of the importance of ships as means of conveyance of insects, especially those affecting stored products, packing materials and other commodities, the Commission recommends that FAO be requested to co-operate in promoting the application on ships, moving in international traffic, of hygienic measures as a regular procedure to prevent re-infestation of cargoes from infested holds, and the dissemination of destructive insects.

Among other subjects discussed, the Commission emphasized the need for controlling water hyacinth (*Eichhornia crassipes*) in the region, and recommends the preparation of lists of pests and diseases, especially those which have not yet been found in Africa but are liable to be introduced.

International Nematology Symposium

The Fourth International Symposium on Nematology held in Hamburg, Germany, 4-7 September 1957, preceeding the International Crop Protection Congress, was attended by 62 nematologists representing 13 countries. The program, which was prepared by the Society of European Nematologists, included discussions on taxonomy, stem nematodes, root-knot nematodes and migratory eelworms, 17 scientific papers and lectures. At the close of the Congress two excursions were arranged to visit Lübeck and the tree nursery in northern Hamburg, which is the largest in Europe, to examine infestations of plant-parasitic nematodes and control measures.

The first symposium was held in 1951 under the auspices of FAO at Harpenden, England, the second in 1953 in Copenhagen during the International Zoological Congress, and the third in 1955 at Wageningen, the Netherlands. The next symposium will probably take place in 1959 in Stockholm. (H. Goffart, Münster/Westf., Germany)

The Spread of White Leaf of Rice

White leaf (hoja blanca) or white stripe, a destructive virus disease of rice, was first found in the Western Hemisphere about 1954. The disease has since been causing serious damage in Cuba and Venezuela, reducing rice yields as much as 25 to 50 percent, and it has been reported also from Panama (see *FAO Plant Prot. Bull. 5* : 161. 1957). Recently the disease was observed in the United States in several rice fields at Belle Glade, Florida. Some short-grain rice varieties have shown certain degrees of resistance, but the long-grain types grown extensively in the United States appear to be susceptible. In addition to rice, some grasses were attacked. The origin of the infection is not known.

In the infested area of Florida, where only a limited amount of rice is grown, eradication of the

disease has been undertaken. In late September 1957 malathion was applied to about 2,000 acres to kill suspected vectors. All planted and volunteer rice in that area is being destroyed by deep plowing or by use of herbicides.

Characteristic symptoms of the disease were described by Adair and Ingram [1] as a mottling, streaking or complete whitening of the leaves. Infected plants are usually stunted, although individual leaves sometimes are longer than normal. When young plants become infected they may be killed. Symptoms have been observed on plants ranging in age from three to ten weeks, suggesting that infection may occur at any stage of development of the rice plant. The panicles of diseased plants are reduced in size and often not fully exserted from the boot. The flowers are deformed and usually all sterile. The hulls turn brown and dry out prematurely. Infected plants sometimes have blackened roots and this condition is followed by the development of new roots at all joints of the rice stalks under water.

The symptoms of the white leaf disease are in general similar to those described for the rice stripe in Japan. Some grasses may carry the virus without manifesting symptoms.

Because of the possibility that the disease might become established in the United States, studies on this disease were initiated by the U.S. Department of Agriculture in the spring of 1957 and are being carried out in Cuba and Venezuela.

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[1] ADAIR, C. R. and J. W. INGRAM. 1957. Plans for the study of hoja blanca – a new rice disease. *Rice Jour.* *60* (4):12.

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